

Serial No.: 10/532,801

Examiner: Stephane B. Allen

Title: OPTICAL UNIT, OPTICAL SENSOR, MULTICHANNEL PHOTODETECTOR AND METHOD FOR
MANUFACTURING OPTICAL UNIT

Page 2 of 6

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application.

Claims 1-6 (Canceled)

7. (Currently amended) A method for manufacturing an optical unit that comprises at least a plurality of transparent blocks and a plurality of dichroic films that are different in wavelength range of a reflectible light beam, comprising at least the steps of:

(a) providing a first the dichroic film that is a dichroic film or total reflection film on one flat surface of a first outer transparent member that comprises at least the one flat surface;

(b) connecting a second at least one intermediate transparent member that comprises at least two parallel flat surfaces to the first film so that one of the two flat surfaces faces the first film, and providing a second film that is a dichroic film or total reflection film and is different from the first film to the other one of the two flat surfaces including at least two parallel flat surfaces to the dichroic film so that one of the two flat surfaces may face the dichroic film, and the other one of the two flat surfaces may be provided with another dichroic film different from the dichroic film;

(c) connecting a second outer another first transparent member that comprises at least one flat surface different from the first transparent member to the second another dichroic film that is positioned as a top layer by one flat surface of on the at least one intermediate another first transparent member; and

(d) cutting a connected body obtained by the steps (a) to (c) along: a first plane that intersects the one flat surface of the first outer transparent member, the one flat surface of the second another first outer transparent member and the two flat surfaces of the plurality of second at least one intermediate transparent member members; and a second plane that is parallel to the first plane.

8. (Canceled)

Serial No.: 10/532,801

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MANUFACTURING OPTICAL UNIT

Page 3 of 6

9. (Original) The method for manufacturing an optical unit according to Claim 7, wherein comprising providing a total reflection film is provided instead of the dichroic film in at least one of the step of (a) and, alternatively, providing a total reflection film instead of the another dichroic film that is positioned as the top layer in the step of (b).
10. (New) The method for manufacturing an optical unit according to Claim 7, wherein a dichroic film is provided in at least one of the step (a) and the step (b).
11. (New) The method for manufacturing an optical unit according to Claim 7, wherein the first film only reflects light whose wavelength is at or above a first minimum wavelength and the second film only reflects light whose wavelength is at or above a second minimum wavelength that is longer than the first minimum wavelength, step (c) further comprising arranging the first and second films in an order in which the minimum wavelengths are increasing.
12. (New) The method for manufacturing an optical unit according to Claim 7, wherein the first film only reflects light whose wavelength is at or above a first minimum wavelength and the second film only reflects light whose wavelength is at or above a second minimum wavelength that is longer than the first minimum wavelength, step (c) further comprising arranging the first and second films in an order in which the minimum wavelengths are decreasing.
13. (New) The method for manufacturing an optical unit according to Claim 7, wherein the first film only reflects light whose wavelength is at or below a first maximum wavelength and the second film only reflects light whose wavelength is at or below a second maximum wavelength that is shorter than the first maximum wavelength, step (c) further comprising arranging the first and second films in an order in which the maximum wavelengths are decreasing.

Serial No.: 10/532,801
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MANUFACTURING OPTICAL UNIT
Page 4 of 8

14. (New) The method for manufacturing an optical unit according to Claim 7, wherein the first film only reflects light whose wavelength is at or below a first maximum wavelength and the second film only reflects light whose wavelength is at or below a second maximum wavelength that is shorter than the first maximum wavelength, step (c) further comprising arranging the first and second films in an order in which the maximum wavelengths are increasing.

15. (New) The method for manufacturing an optical unit according to Claim 7, wherein each film only reflects light whose wavelength is at or above a certain minimum wavelength and the minimum wavelength of each film is different, step (c) further comprising arranging the films in an order in which the minimum wavelengths are increasing.

16. (New) The method for manufacturing an optical unit according to Claim 7, wherein each film only reflects light whose wavelength is at or above a certain minimum wavelength and the minimum wavelength of each film is different, step (c) further comprising arranging the films in an order in which the minimum wavelengths are decreasing.

17. (New) The method for manufacturing an optical unit according to Claim 7, wherein each film only reflects light whose wavelength is at or below a certain maximum wavelength and the maximum wavelength of each film is different, step (c) further comprising arranging the films in an order in which the maximum wavelengths are decreasing.

18. (New) The method for manufacturing an optical unit according to Claim 7, wherein each film only reflects light whose wavelength is at or below a certain maximum wavelength and the maximum wavelength of each film is different, step (c) further comprising arranging the films in an order in which the maximum wavelengths are increasing.